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Transmitted herewith for filing is the Provisional Patent Application of Trac Too! Products, LLC, the inventor being:

Given Name (first and middle [if any])	**Family Name or Surname**	**Residence** (City and either State or Foreign Country)
Michael	Puczkowski	Lakewood, Ohio

Title of the invention:

FLUID APPLICATOR ASSEMBLY

Enclosed application parts (*check all that apply*)

- ☒ 9 Pages of Specification
- ☒ 14 Sheets of Drawings
- ☐ _____ Page of Abstract
- ☐ Application Data Sheet
- ☐ CD(s)
- ☐ Other (specify) _____

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16 December 2003
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Stephanie Weinhardt
Stephanie Weinhardt

FLUID APPLICATOR ASSEMBLY

BACKGROUND

[0001] Known methods of painting use a conventional roller assembly, for example, a roller such as a cardboard or plastic having an absorbent material such as nylon, reticulated foam, felt or a sponge that temporarily holds a liquid (e.g. paint) until the liquid is applied to a work surface. This is widely used to cover large surface areas typically where not much trim or detail painting is required.

[0002] Still another method is to modify the conventional roller so that it receives paint under relatively high pressure through the cylindrical roller and permeates the inner surface of the absorbent material where it passes to the external surface thereof for application to an associated work surface. Known pressure roller assemblies supply paint to an internal passage of the roller at pressures of approximately 1000 psi.

[0003] Known pressure roller assemblies generally include a roller tube, a paint distributor, an auger, and a roller. The roller is similar to a conventional cylindrical paint roller; however, the roller must be able to allow paint to be delivered from inside the roller and travel to an outer surface of the roller. Such a construction makes these rollers more expensive than conventional rollers. The auger is received by the roller and advances the paint within the hollow portion of the roller. The paint distributor is received by the auger and the roller. The paint distributor typically is a cylindrical member having a plurality of holes through which the paint travels towards the auger and the roller. This subassembly, which includes the roller, the auger, and the paint distributor, is sealed at each end by an end cap. The subassembly is then mounted on a roller tube, which is hollow so that paint can flow through the tube toward the subassembly. Paint travels through the tube and into the subassembly under pressure that can be as great as 1000 psi.

[0004] Such pressure roller assemblies as described above allow an operator to typically cover more surface area during an application job than a conventional paint roller. Nevertheless, many drawbacks are attributed to these pressure roller assemblies. First, the known assembly operates at high pressures, which can cause stress to the components of the assembly as well as fatigue to the operator due to the high pressure working against the operator. The known assembly also requires a special roller that includes small fluid ports that can become blocked resulting in a malfunctioning painting apparatus. Also, the roller can become saturated resulting in splatter and drips during the painting process. Known pressure rolling assemblies also include many sealed wear parts that can become worn and leak.

[0005] Known pressure rolling assemblies also do not include splatter guards and can be very difficult and time consuming to clean. Furthermore, the paint distribution in the pressurized painting apparatus can also be uneven. Accordingly, it is desirable to provide an automatic painting apparatus that overcomes the shortcomings mentioned above.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIGURE 1 is a side view of a fluid applicator assembly.

[0007] FIGURE 2 is a top view of a handle and frame of the fluid applicator assembly of FIGURE 1.

[0008] FIGURE 3 is a front view of the fluid applicator assembly of FIGURE 1 without rollers attached to the assembly.

[0009] FIGURE 4 is a top view of the fluid applicator assembly of FIGURE 1.

[00010] FIGURE 5 is a perspective view of an alternative embodiment of a fluid applicator assembly without paint and/or liquid feed lines attached to the assembly.

[00011] FIGURES 6-8 are front, top and side views of a frame of the fluid applicator assembly of FIGURE 5.

[00012] FIGURES 9-11 are front, top and side views of a side rail of the fluid applicator assembly of FIGURE 5.

[00013] FIGURES 12-14 are front, top and side views of a splash guard of the fluid applicator assembly of FIGURE 5.

[00014] FIGURES 15-17 are front, top and side views of a cross member of the fluid applicator assembly of FIGURE 5.

[00015] FIGURES 18-20 are front, top and side views of a shield of the fluid applicator assembly of FIGURE 5.

[00016] FIGURES 21-23 are front, top and side views of a wiper of the fluid applicator assembly of FIGURE 5.

[00017] FIGURES 24-26 are front, top and side views of a discharge tube of the fluid applicator assembly of FIGURE 5.

[00018] FIGURE 27 is a side view of the fluid applicator assembly of FIGURE 5.

[00019] FIGURE 28 is a top view of the fluid applicator assembly of FIGURE 5.

[00020] FIGURE 29 is a front view of the fluid applicator assembly of FIGURE 5.

DETAILED DESCRIPTION

[00021] With reference to FIGURE 1, a fluid applicator assembly 10 includes a handle 12 having a first end 14 that attaches to a paint supply (not shown) and a second end 16 that attaches to a frame 18. The fluid applicator assembly will be described with reference to applying paint to a surface; however, it is to be understood that the apparatus can be used to apply any conventional fluid or liquid to a surface, including, but not limited to, stain, primer, sealant etc. The first end 14 includes a threaded female connection that can receive the feed line from a paint source that is under pressure. The pressure at which the paint is under from the paint source in the present embodiment can be much less than the pressure at which paint is under in a known pressure applicator. In a preferred embodiment, the paint or liquid is delivered as

measured by gallons per minute, and the pressure at which the paint or liquid is delivered is determined by the characteristics of the paint and the path through which it travels. The paint or liquid, for example, can be delivered at about .25 to about .28 gallons per minute.

[00022] The second end 16 of the handle includes a threaded male connection that attaches to the frame 18. The handle 12 also includes a passage 22 that allows paint to travel through the handle from the first end to the second end. The handle 12 can also include a valve (not shown) that can selectively open and close the passage 22 to control the flow of paint through the handle. The valve can also be located on the feed line (not shown) or any where upstream from the discharge point of the apparatus, which will be described in more detail below.

[00023] The frame includes a threaded female receptacle at a first end 24 that receives the second end 16 of the handle 12. With reference to FIGURE 2, the frame 18 is fork-shaped and includes a stem 26 and a pair of tines 28. The handle includes a passage 32 that aligns with the passage 22 in the handle when the frame is attached to the handle. The frame 18 attaches to a roller bracket 34 (FIGURE 1).

[00024] Referring to FIGURE 3, the roller bracket 34 is generally U-shaped and includes a bottom member 36 and two side members 38 spaced from one another at opposite ends of the bottom member. Each side member 38 includes a first or upper dowel 42 and a second or lower dowel 44. The upper dowels 42 are aligned to receive a first or upper roller 46, as seen in FIGURE 1. The lower dowels 44 are aligned to receive a second or lower roller 48. The rollers 46 and 48 used with the fluid applicator assembly can be conventional rollers that can be used with a conventional paint roller assembly, i.e. no special provision or modification is required to deliver paint or similar applied liquid material. End caps 52 are provided to fit into the end openings of the rollers 46 and 48 to change the size of the openings so that the rollers can be received by and rotate about the respective dowels 42 and 44. The end caps typically are provided with the conventional rollers.

[00025] With continued reference to FIGURE 3, the roller bracket 34 also includes a cross-member 54 to which extensions 56 attach that are received in openings 58 of the tines 28 to connect the frame 18 to the roller bracket 34. The connection between the frame 18 and the roller bracket 34 advantageously prevents the roller bracket from moving due to gravity; however, the roller bracket may move in relation to the frame when a force is applied to the roller bracket. The side members 38 attach to the bottom member 32 such that the side members can move as shown by arrow A. The side members 38 are resilient so that the rollers 46 and 48 are tightly held between the side members and the side members can move to selectively release the rollers 46 and 48.

[00026] A splash guard 62 attaches to the rear side of the cross-member 54. With reference to FIGURE 1, the splash guard can be curved to complement the upper roller 46; however, the guard can take other configurations also. Preferably, the splash guard 62 has a width substantially equal to the longitudinal length of the upper roller 46. Referring to FIGURE 4, the splash guard 62 includes channels 64 that can provide stiffness to the splash guard and also direct any excess liquid that falls off the upper roller 46 towards the lower roller 48. A lower guard 66 depends from the cross-member 54. The lower guard 66 is positioned to allow rotation of the lower roller 48 while preventing an excess of paint from building up onto the top of the lower roller 48. Any excess paint that builds up on the lower guard 66 can drip onto the bottom member 36, which also acts as a drip guard. The lower guard 66 also preferably has a width that is equal to the longitudinal length of the lower roller 48.

[00027] Paint travels through the passage 22 of the handle 12 into the passage 32 of the frame 18. With reference to FIGURE 2, a tee fitting 68 attaches to the frame 18 at the outlet of the passage 32. Alternatively, the tee fitting 68 can attach to the second end 16 of the handle 12. Tubes 72 attach to the tee fitting 68 at one end and each tube attaches to an elbow fitting 74 (FIGURE 3) at an opposite end. The elbow fitting 74 protrudes through an opening 76 and each side member 38 of the roller bracket 34. The elbows 74 attach to a discharge tube 78 that includes a discharge opening 82. The

discharge opening 82, preferably, is positioned at the top of the discharge tube 78 so that paint flows upwardly out of the discharge opening 82 over the discharge tube and then falls onto the upper roller 46. Only one discharge tube 82 is shown in FIGURE 4; however, the discharge tube can include a plurality of openings. Furthermore, the openings can be situated anywhere on the discharge tube in relation to the rollers.

[00028] In an alternative embodiment, the paint can feed directly into the rollers, similar to the known pressure rolling assemblies; however, in such an embodiment, the rollers described above that are used with the known pressure roller assemblies would be used. In such an embodiment, the tubes 72 can feed into the upper roller 46, which can have a longer nap. The lower roller 48 can have a finer nap to provide a smooth finish to the paint when applied to the surface.

[00029] With reference to FIGURE 5, a fluid applicator assembly 100 without a handle is shown. A handle similar to the handle 12 described above can attach to the assembly. The assembly includes a substantially U-shaped frame member 102 that attaches to a pair of side rails 104. With reference to FIGURES 5-8, the frame 102 includes an aperture 106 centrally located in the frame and openings 108 located adjacent the terminal ends of the frame. The aperture 106 can receive a portion of the handle (not shown) to attach the handle to the frame 102. Alternatively, the handle can attach to the frame in other conventional manners. The openings 108 receive a rod or conventional fasteners 112 (only one shown) to attach the frame 102 to the side rails 104. when attached to the frame 102, the side rails 104 are substantially parallel to one another.

[00030] Referring to FIGURES 9-11, one side rail 104 is shown and it is understood that each side rail is of a similar configuration. Each side rail is generally rectangular and includes a first or upper dowel opening 114 that receives a dowel 116 (FIGURE 5) that is received by a first or upper roller 118. Each side rail also includes a second or lower dowel opening 122 that receives a dowel 116 that is received by a second or lower roller 124 (FIGURE 5). Each

side rail also includes a feed line opening 126 that receives a paint feed line (not shown) similar to the lines described above with reference to the embodiment depicted in FIGURES 1-4. Also, each side rail includes a lower opening 128 that receives a fastener 132 (FIGURE 5) to attach a splash or drip guard 134 to the side rail. Each side rail 104 also includes a central opening 136 that receives the rod or fasteners 112 (FIGURE 5) to attach the frame to the side rails.

[00031] The upper and lower rollers 118 and 124 are mounted so that they can freely rotate about the central axis of the dowels 116. The frame 102 attaches to the side rails 104 such that the side rails can rotate with respect to the frame and it is contemplated that the attachment is such that the side rails rotate with respect to the frame only when a force other than gravity is applied to the side rails. The side rails 104 can attach to the drip guard 134 in other conventional methods, for example, welding or the like.

[00032] With reference to FIGURES 12-14, the splash or drip guard 134 includes a pair of end flanges 136, each flange located at a longitudinal end of the guard 134. Each end flange 136 includes an opening 138 to receive the fastener 132 (FIGURE 5). The drip guard 134 also includes a pair of longitudinal flanges 140 running the length of the drip guard. The longitudinal flanges 140 do not extend the same height as the end flanges, and are formed to retain any paint or liquid that happens to drip onto the drip guard. The drip guard is generally rectangular in shape and can be made from aluminum or another suitable material.

[00033] A cross member 142 attaches to each side rail 104 at the central opening 136 of each side rail. The rod or fastener 112 can attach the cross member 142 to the side rail 104. Also, the cross member 142 can attach to the side rail 104 in other conventional manners, such as via a weld, glue or the like. With reference to FIGURE 17, the cross member is hollow and square in cross-section. Referring to FIGURE 15, the cross member includes a plurality of holes 144 that receive fasteners to attach a shield 146 and a wiper 148 (FIG. 5).

[00034] The shield 146 is similar to the splash guard 62 described above with reference to FIGURES 1-4. The shield 146 is curved to complement the

shape of the upper roller 118. The shield 146, the wiper 148 and the cross member 142 are depicted as three separate pieces; however, they can be formed from one integral piece of material or another number of pieces of material. With reference to FIGURES 18-20, the shield includes a curved portion 152 and a flange 154 extending from the curved portion. The flange includes a plurality of openings 156 that align with the holes 144 in the cross member 142. Fasteners 150 (FIGURE 27) can extend through the openings 156 and the holes 144 to fasten the shield 146 to the cross member; however, the shield can attach to the cross member in other conventional manners.

[00035] The wiper 148 is similar to the lower guard 66, described above with reference to FIGURES 1-4. With reference to FIGURES 21-23, the wiper 148 includes openings 158 that align with the holes 144 of the cross member 142 to attach the wiper to the cross member.

[00036] A discharge tube 160, similar to the discharge tube 78 described above aligns with the feed line openings 126 in the side rails 104. The system and lines that deliver liquid and/or paint, or other similar product to the discharge tube is similar to that described above with reference to FIGURES 1-4. The discharge tube depicted in FIGURES 24-26 only includes one discharge opening 162; however, as explained above the amount and locations of discharge opening(s) can vary.

[00037] Since the paint need not flow through the roller in order to be applied to the roller, the fluid applicator assembly can be run using a low pressure pump. Furthermore, no special roller is needed with the present embodiments. The fluid applicator assembly also includes a drip guard and includes fewer sealed parts than known pressure rolling assemblies. When using the present embodiment, the operator can use rollers each having a different nap. For example, a longer nap roller can be used for the upper roller and a finer nap roller can be used for the lower roller to allow for a smoother finish.

[00038] The fluid applicator assembly can be made such that much of the assembly in interconnected to eliminate joints. The roller bracket and the splash

guard can be integrally molded. Furthermore, the roller bracket can be made to pivot in relation to the frame and the handle, or it can be fixed.

[00039] The exemplary embodiment has been described with reference to the preferred embodiments. Obviously, modifications and alterations will occur to others upon reading and understanding the preceding detailed description. It is intended that the exemplary embodiment be construed as including all such modifications and alterations insofar as they come within the scope of the appended claims or the equivalents thereof.

What is claimed is a painting apparatus as described above and in the figures.

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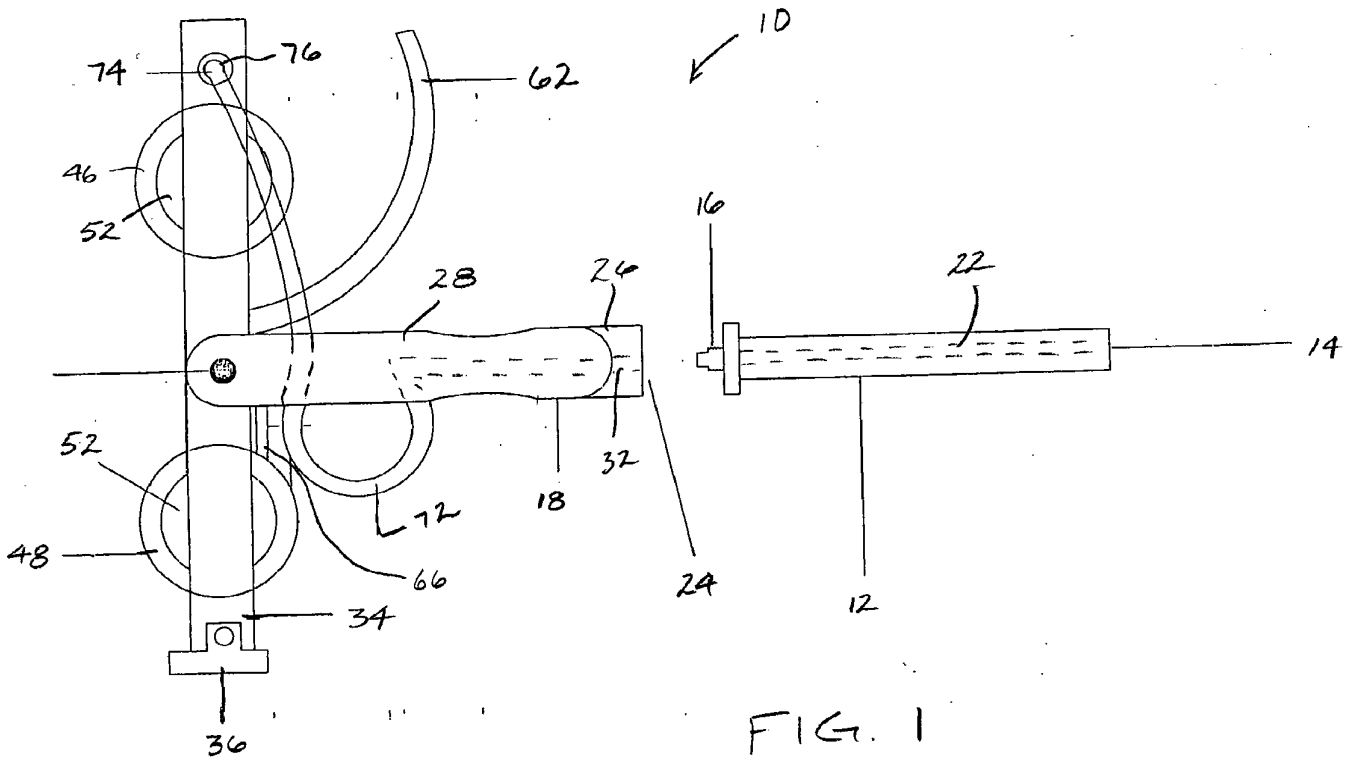

FIG. 1

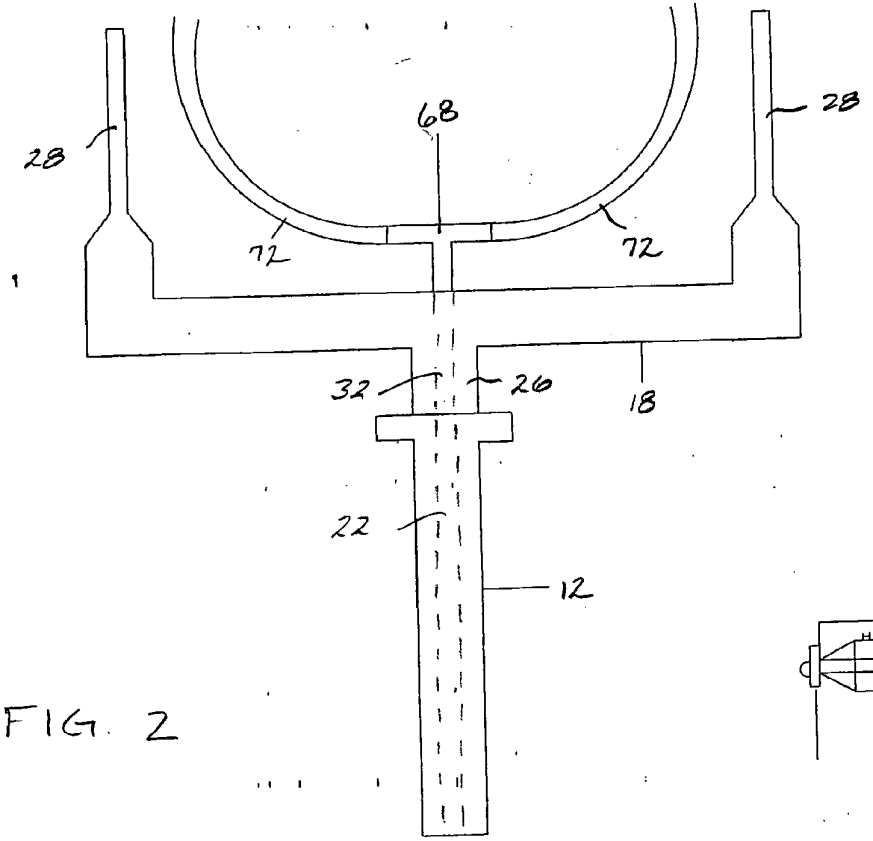

FIG. 2

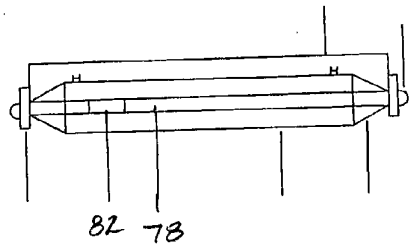

FIG. 4

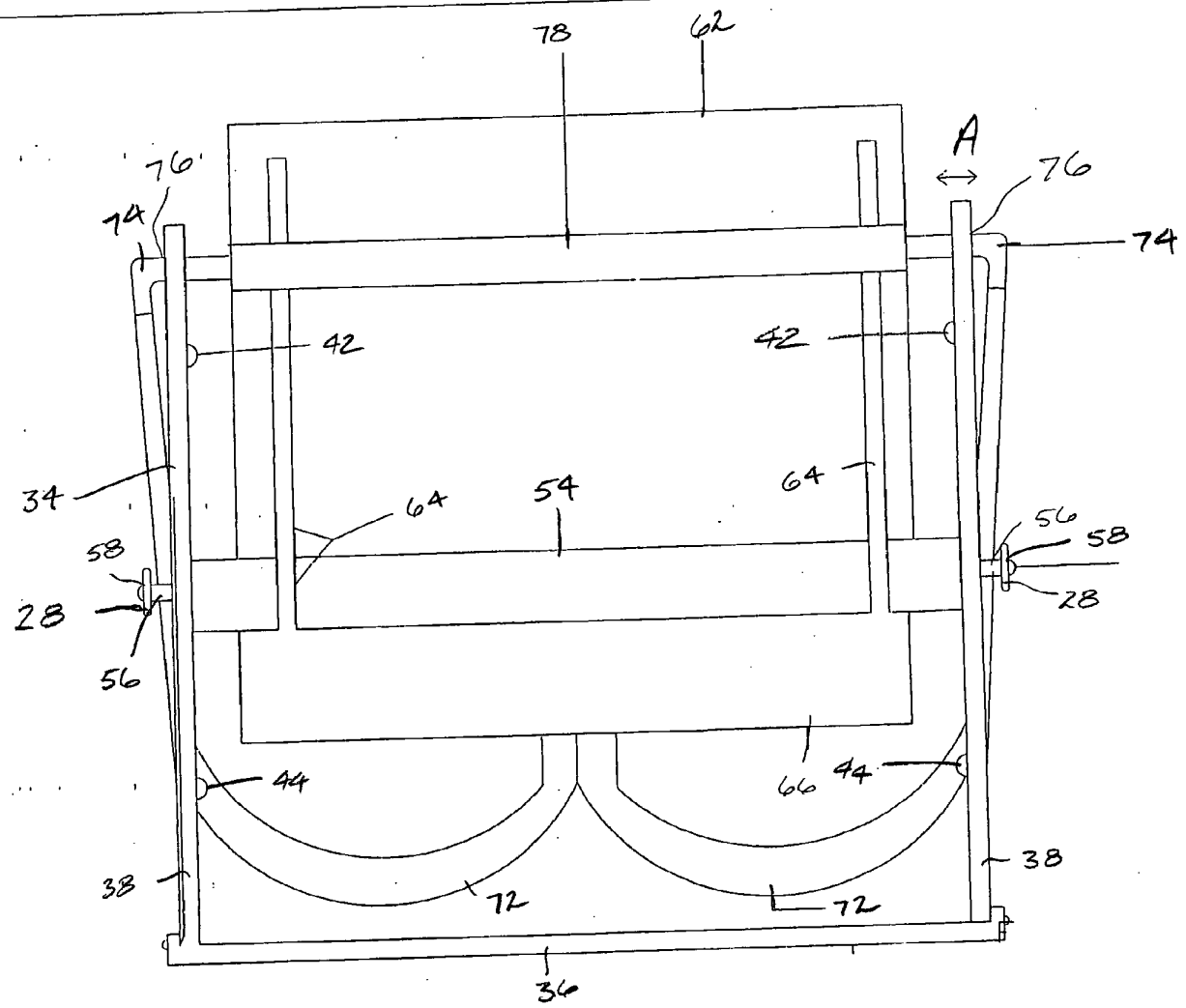
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FIG. 3

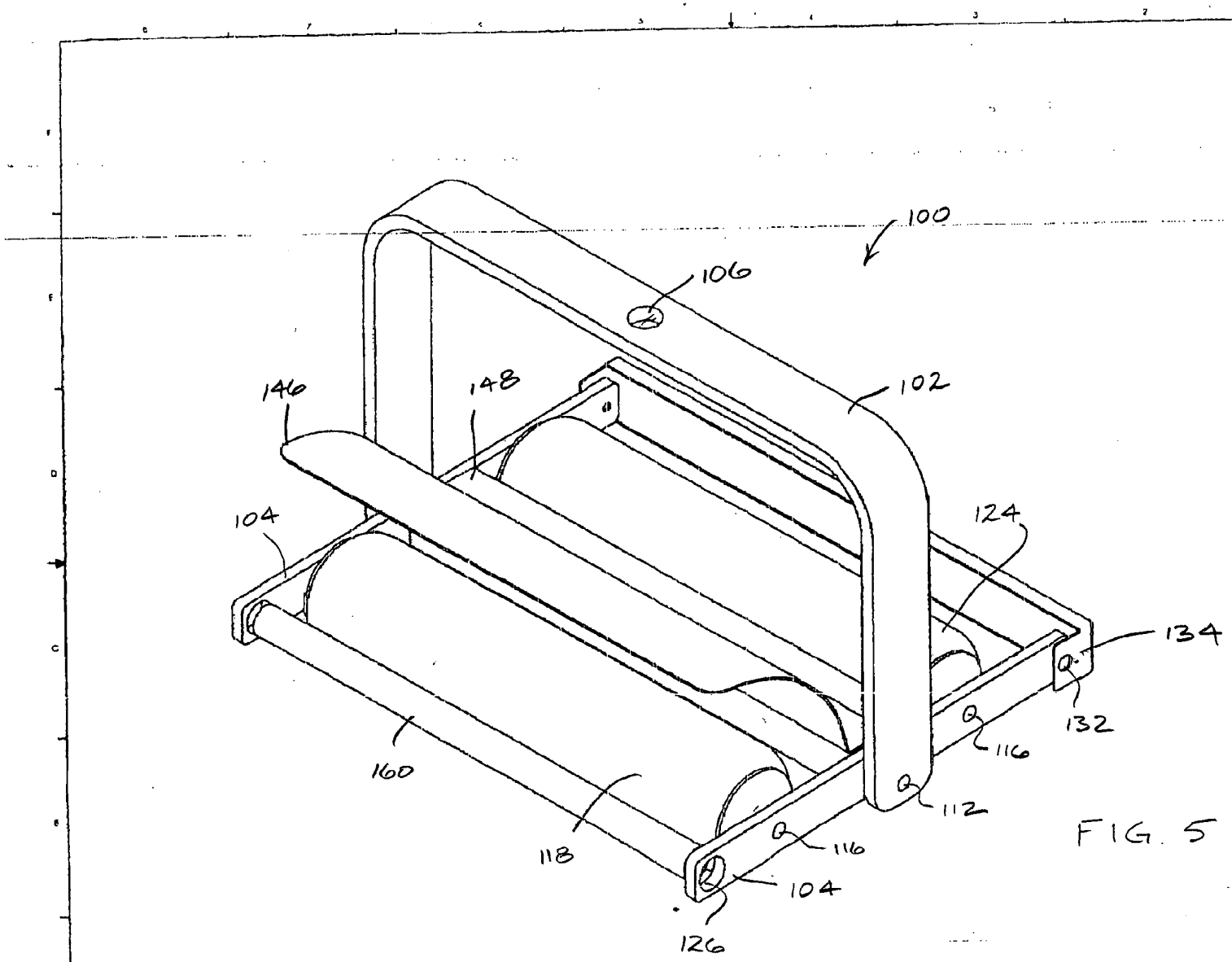


FIG. 5

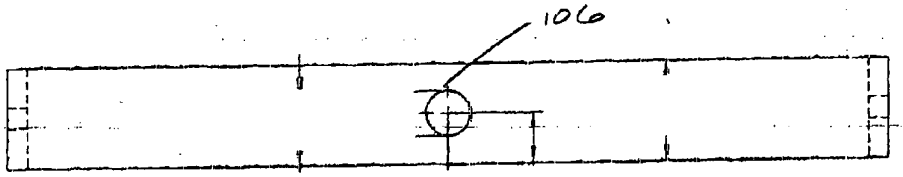


FIG. 7

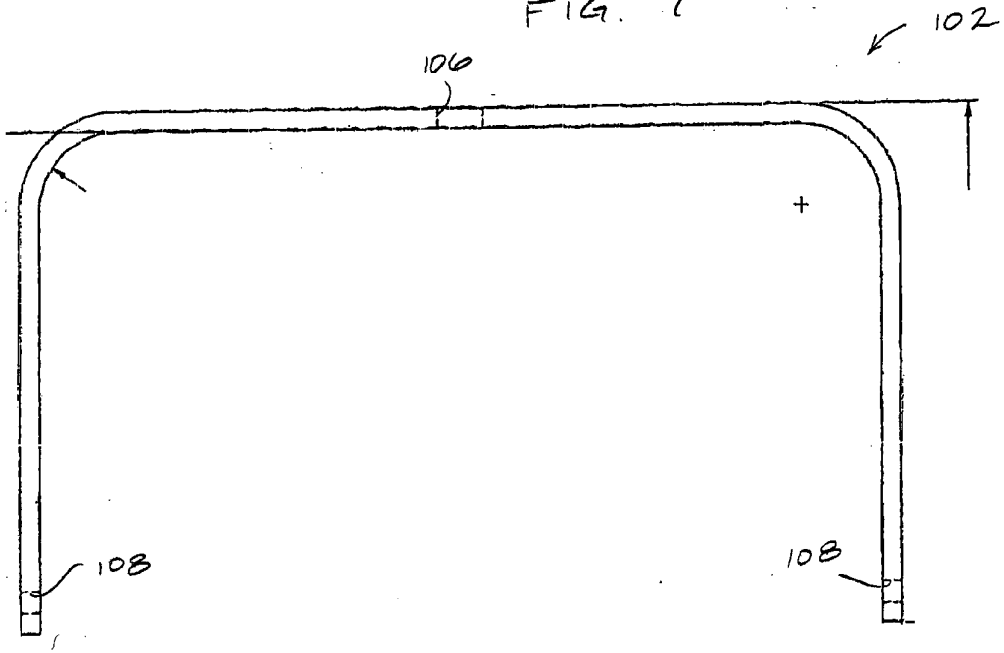


FIG. 6

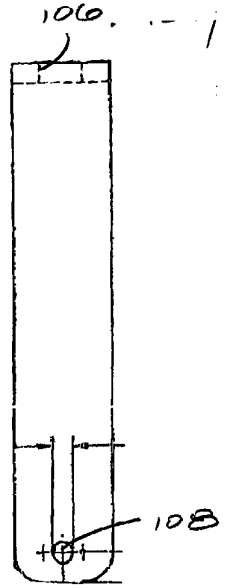


FIG. 8

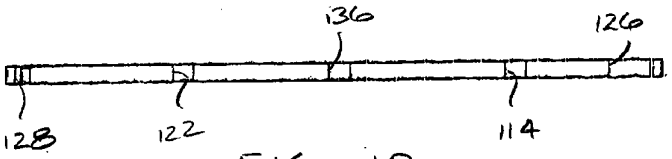


FIG. 10

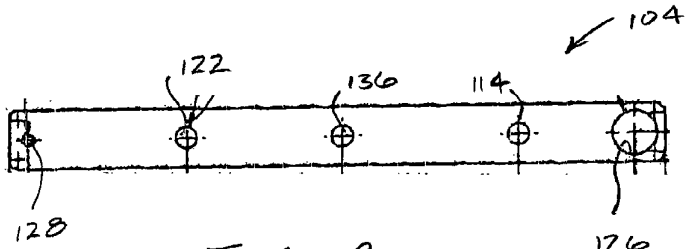


FIG. 9

FIG. 11

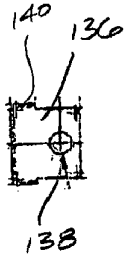


FIG. 14

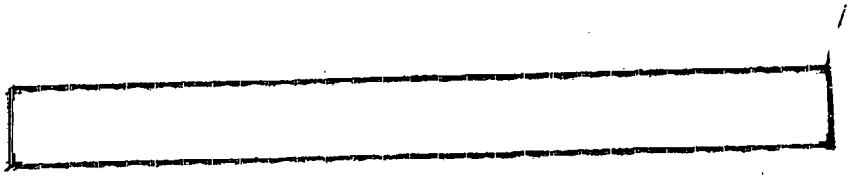


FIG. 13

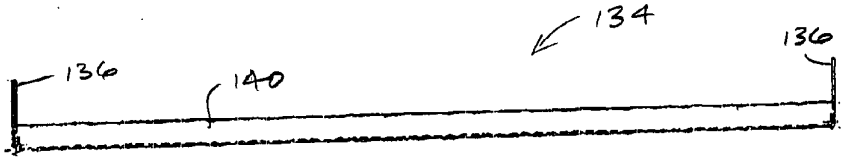


FIG. 12

FIG. 17

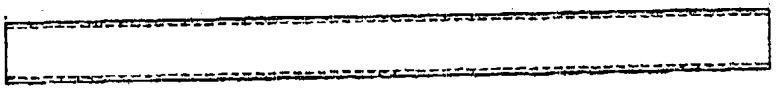


FIG. 16

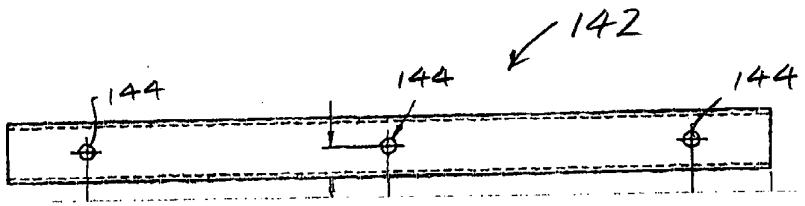


FIG. 15

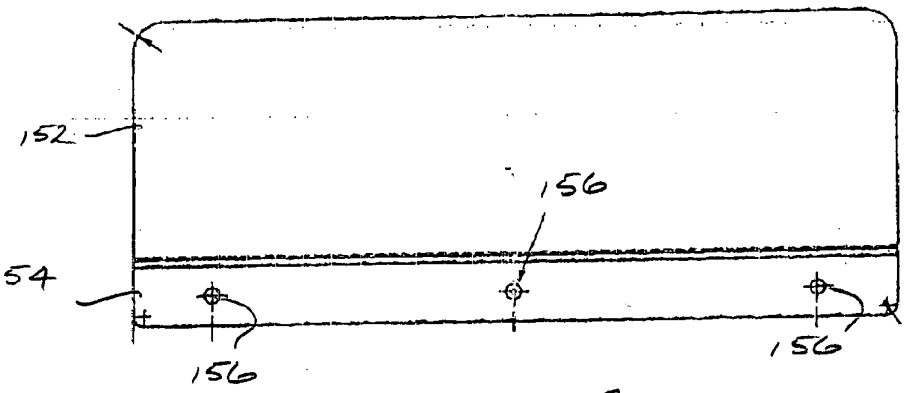
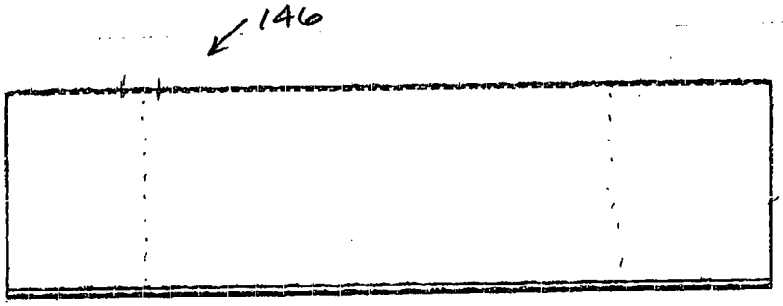


FIG. 19



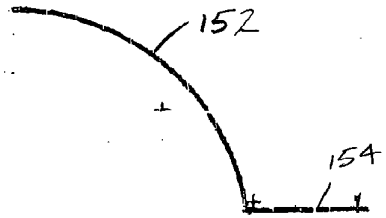


FIG. 18

FIG. 20

FIG. 23

FIG. 22

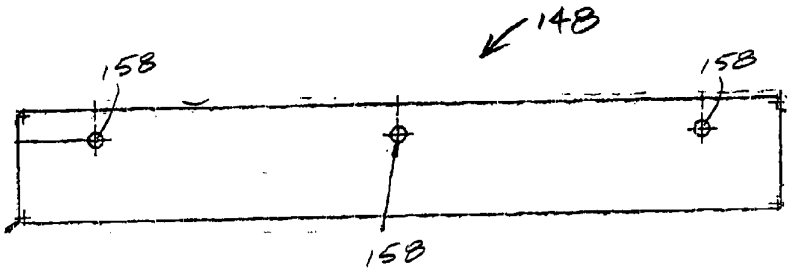


FIG. 21

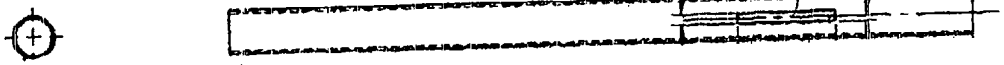


FIG. 25

FIG. 26

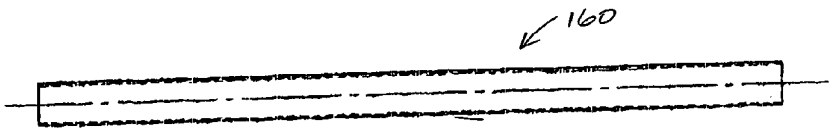


FIG. 24

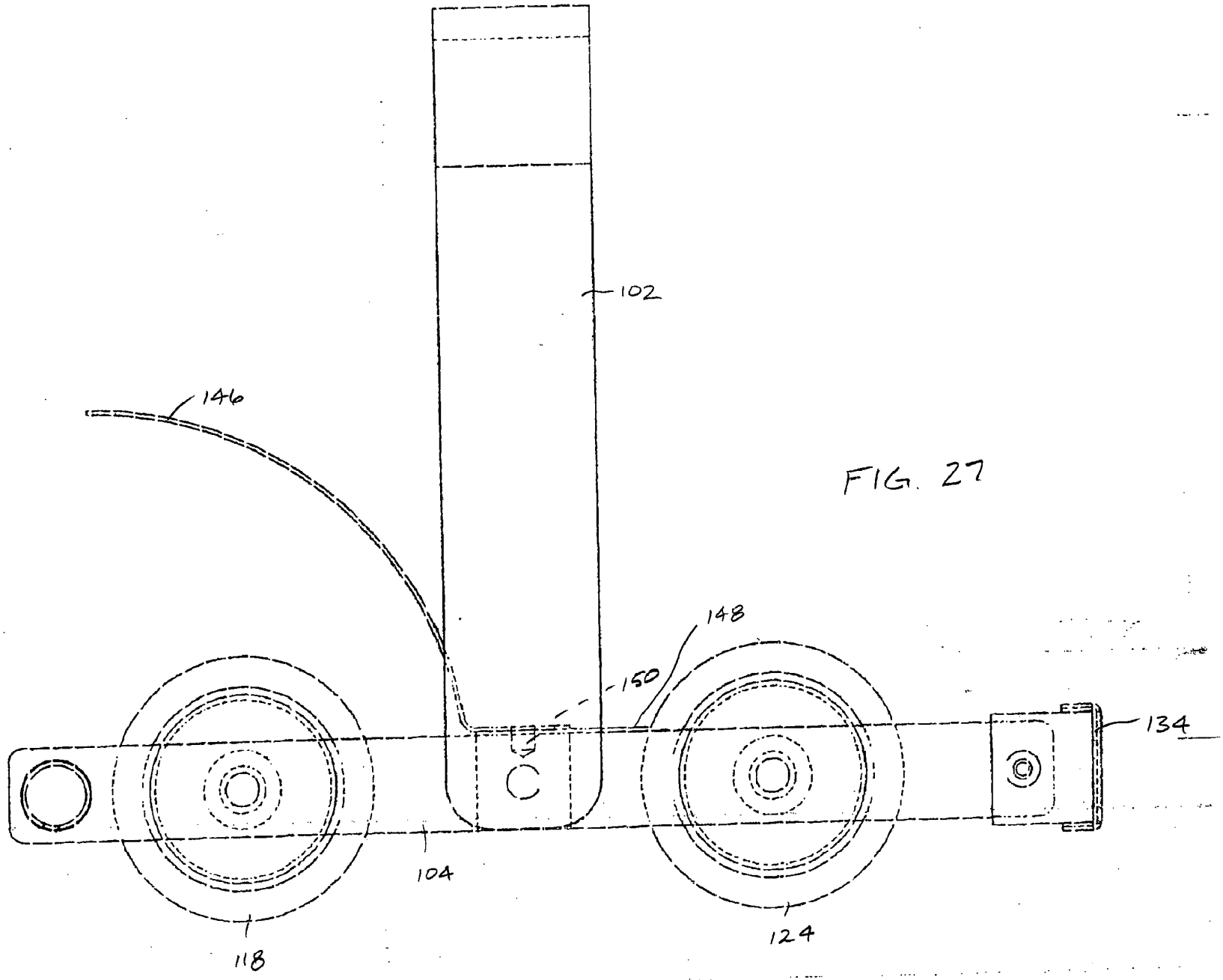


FIG. 27

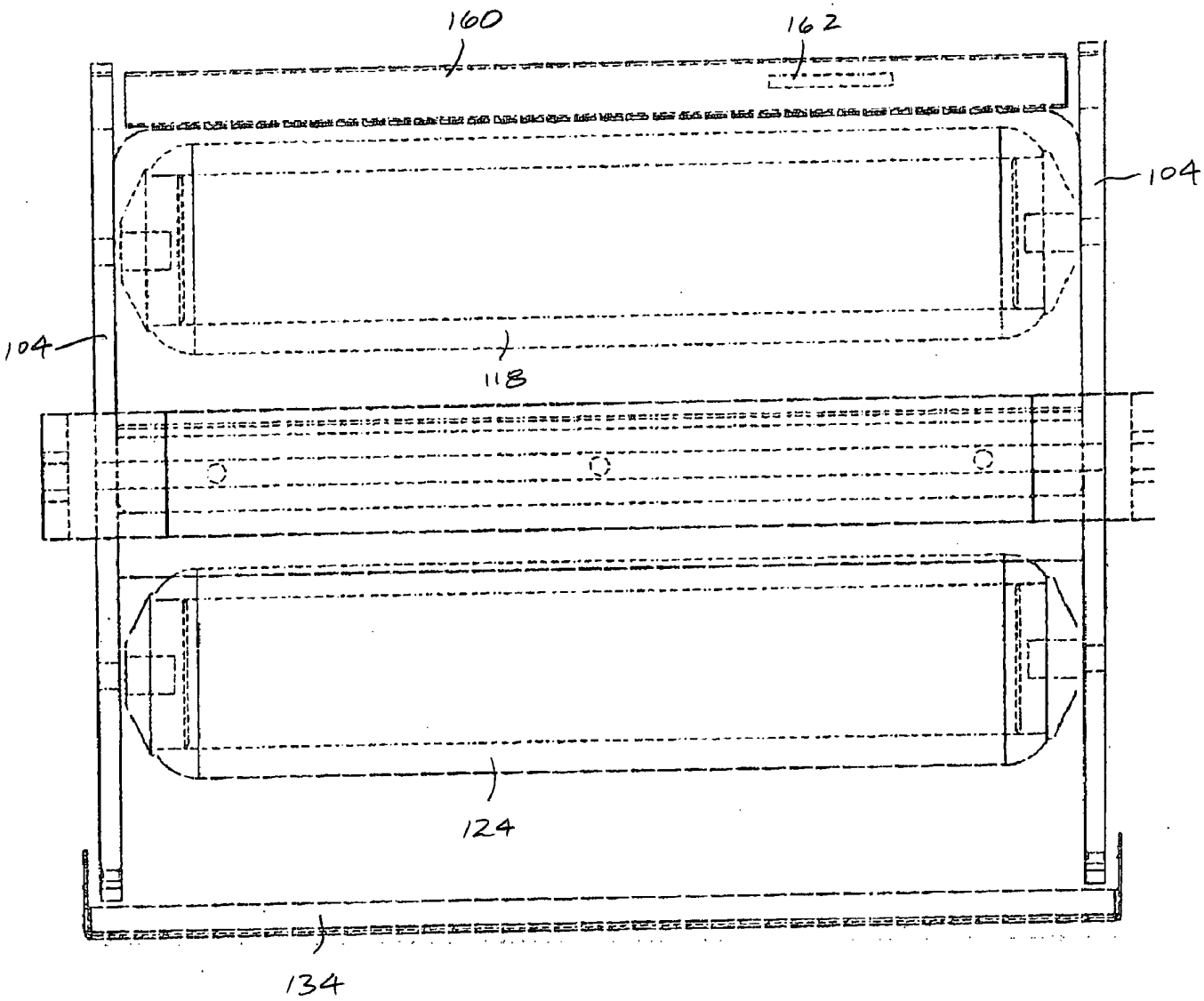


FIG. 28

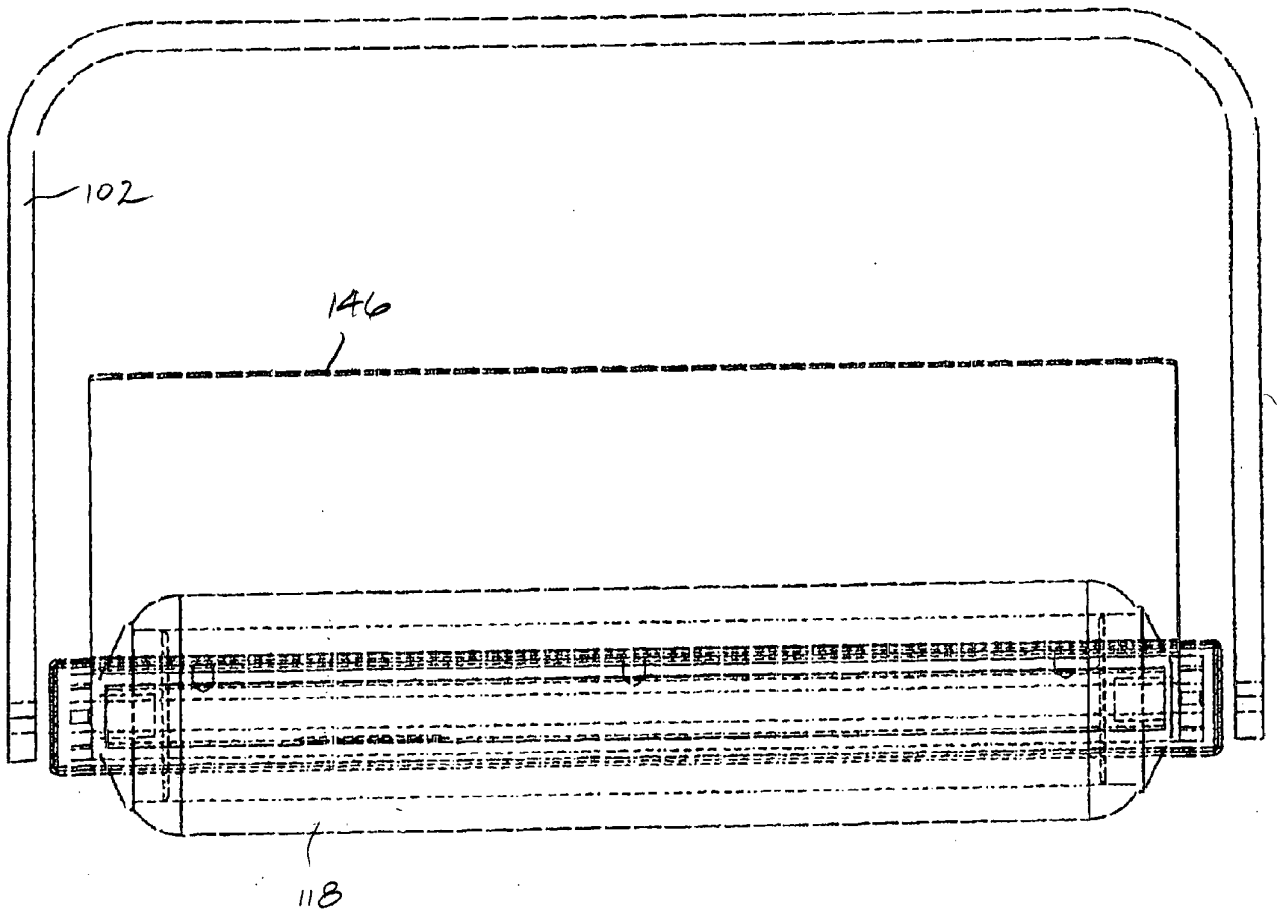


FIG. 29